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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHAU, COREY P	
ART UNIT	**PAPER NUMBER**
2644	

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/014,834	Applicant(s) KASHANI, AHMAD REZA
	Examiner Corey P. Chau	Art Unit 2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 06/24/02, 6/11/02, 4/22/02
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 2-21 are objected to because of the following informalities: on the first line of each claim, recites "A system", which should be replaced with "The system".

Claims 23-24 are objected to because of the following informalities: on the first line of each claim, recites "A method", which should be replaced with "The method".

Claims 26 are objected to because of the following informalities: on line 1, recites "A system", which should be replaced with "The system".

Claims 28-35 are objected to because of the following informalities: on the first line of each claim, recites "A system", which should be replaced with "The system".

Claim 6 is objected to because of the following informalities: on line 25, recites "controllertransfer" which should be replaced with "controller transfer".

Claim 6 is objected to because of the following informalities: on line 6, recites "ζ_n" which should be replaced with "ζ_s".

Claim 26 is objected to because of the following informalities: on line 13, recites "ζ_n" which should be replaced with "ζ_s".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 7, 9, 11, 17, 22, 24, 25, 27, 33, and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The term "substantially" in claims 1, 7, 11, 22, 25, and 27 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

5. The term "about" in claims 9 and 24 is a relative term which renders the claim indefinite. The term "about" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

6. Claim 1 recites the limitation "the low-frequency coloration" in line 1.

Claim 17 recites the limitation "said enclosure" in line 2. It is unclear to the Examiner what "said enclosure" is referring to.

Claim 33 recites the limitation "the compliance" in line 10.

Claim 33 recites the limitation "the acoustic" in line 10.

Claim 35 recites the limitation "the inertance" in line 21.

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 7-20, and 22-25 rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No 5974155 to Kashani et al. (hereafter as Kashani).
Regarding Claim 1, Kashani discloses a system for actively damping the low-frequency coloration of sound (Fig. 2; abstract) comprising: a listening room (Fig.1) including a sound source, said listening room defining at least one mode of low-frequency coloration attributable to said sound source; an acoustic wave sensor positioned within said listening room, wherein said acoustic wave sensor is operative to produce a first signal representative of said at least one mode of low-frequency coloration (Fig. 1); an acoustic wave actuator responsive to a second signal and positioned within said listening room, wherein said acoustic wave actuator is substantially collocated with said acoustic wave sensor (Fig. 1); and an electronic feedback controller (Fig. 2) defining an input coupled to said first signal and an output, wherein said electronic feedback controller is operative to generate said second signal at said output by applying a feedback controller transfer function to said first signal, said feedback controller transfer function comprises a second order differential equation including a first variable representing a predetermined damping ratio and a second variable representing a tuned natural frequency, said second variable representing said tuned natural frequency is selected to be tuned to said at least one mode of low-frequency coloration, said

feedback controller transfer function defines a frequency response having a characteristic maximum gain substantially corresponding to the value of said at least one mode of low-frequency coloration, and wherein said feedback controller transfer function creates a 90 degree phase lead substantially at said at least one mode of low-frequency coloration (Claim 1).

9. Regarding Claim 2, Kashani discloses said first signal represents pressure sensed by said acoustic wave sensor and said second signal represents a rate of change of volume velocity to be produced by said acoustic wave actuator (Claim 2).

10. Regarding Claim 3, Kashani discloses said first signal represents pressure sensed by said acoustic wave sensor, said second signal represents a rate of change of volume velocity to be produced by said acoustic wave actuator, and wherein said feedback controller transfer function is as follows:

$$\frac{V(s)}{P(s)} = G \frac{s^2}{s^2 + 2\xi\omega_n s + \omega_n^2}$$

where the units of V(s) corresponds to said rate of change of volume velocity, P(s) corresponds to the pressure at the location of said acoustic wave sensor and said acoustic wave actuator, s is the Laplace variable, ξ is a damping ratio, ω_n is said tuned natural frequency, and G is a gain value (Claim 4).

11. Regarding Claim 7, Kashani discloses said feedback controller transfer function defines a frequency response and wherein the gain of said frequency response increases substantially uniformly from a minimum frequency value to an intermediate frequency value to define a characteristic maximum gain and decreases substantially

uniformly from said intermediate frequency value to a maximum frequency value (Claim 5).

12. Regarding Claim 8, Kashani discloses said intermediate frequency value corresponds to said at least one mode of low-frequency coloration (Claim 6).

13. Regarding Claim 9, Kashani discloses said first variable representing said predetermined damping ratio is a value between about 0.1 and about 0.35 (Claim 7).

14. Regarding Claim 10, Kashani discloses said first variable representing said predetermined damping ratio and said second variable representing said tuned natural frequency are selected to damp said at least one mode of low-frequency coloration (Claim 8).

15. Regarding Claim 11, Kashani discloses said second variable representing said tuned natural frequency is selected to be substantially equivalent to a natural frequency of a target acoustic mode of said at least one mode of low-frequency coloration (Claim 9).

16. Regarding Claim 12, Kashani discloses said target acoustic mode comprises the lowest frequency audible mode of low-frequency coloration (Claim 10).

17. Regarding Claim 13 said second variable representing said tuned natural frequency is selected to be a value between adjacent frequency modes (Claim 11).

18. Regarding Claim 14, Kashani discloses said electronic feedback controller is further operative to invert the phase of said second signal (Claim 12).

19. Regarding Claim 15, Kashani discloses said acoustic wave actuator introduces characteristic acoustic dynamics into said system and wherein said electronic feedback

controller is operative to introduce inverse actuator dynamics into the system (Claim 13).

20. Regarding Claim 16, Kashani discloses said electronic feedback controller comprises an acoustic damping controller programmed to apply said feedback controller transfer function, and wherein said acoustic damping controller is configured to selectively damp or treat greater than one frequency mode of coloration (i.e. inherent that the acoustic damping controller is capable of damping or treating greater than one frequency mode of coloration)(Claim 14; column 3, lines 5-17; column 5, line 56 to column 6, line 7).

21. Regarding Claim 17, as best understood with regards to the 112, 2nd problem as mention above, Kashani discloses said acoustic damping controller is positioned within an enclosure (Figs. 1 and 2).

22. Regarding Claim 18, Kashani discloses said first signal and said second signal comprise respective electric signals (Claim 15).

23. Regarding Claim 19, Kashani discloses said acoustic wave actuator and said acoustic wave sensor are positioned to correspond to the location of an acoustic anti-node of a target acoustic mode within said listening room (Claim 16).

24. Regarding Claim 20, Kashani discloses said acoustic wave sensor is a microphone (Figs. 1 and 2).

25. Regarding Claim 22, Kashani discloses a method for actively damping the low-frequency coloration of sound within a listening room including a sound source, said listening room defining at least one mode of low-frequency coloration attributable to said

sound source (Fig. 1; abstract), said method comprising the steps of: positioning an acoustic wave sensor within said listening room, wherein said acoustic wave sensor is operative to produce a first signal representative of said at least one mode of low-frequency coloration (Fig. 1); positioning an acoustic wave actuator responsive to a second signal within said listening room, wherein said acoustic wave actuator is substantially collocated with said acoustic wave sensor (Fig. 2); coupling an input of an electronic feedback controller to said first signal, wherein said electronic feedback controller is operative to generate said second signal at an output by applying a feedback controller transfer function to said first signal (Figs. 1 and 2), said feedback controller transfer function comprises a second order differential equation including a first variable representing a predetermined damping ratio and a second variable representing a tuned natural frequency, said second variable representing said tuned natural frequency is selected to be tuned to said at least one mode of low-frequency coloration, said feedback controller transfer function defines a frequency response having a characteristic maximum gain substantially corresponding to the value of said at least one mode of low-frequency coloration, and wherein said feedback controller transfer function creates a 90 degree phase lead substantially at said at least one mode of low-frequency coloration; selecting a value for said first variable representing said predetermined damping ratio; selecting a value for said second variable representing said tuned natural frequency; and operating said acoustic wave actuator in response to said second signal (Claim 17).

26. Regarding Claim 23, Kashani discloses said value for said first variable and said value for said second variable are selected to damp said at least one mode of low-frequency coloration (Claim 18).

27. Regarding Claim 24, Kashani discloses said value for said first variable is selected to be a value between about 0.1 and about 0.35 and wherein said value for said second variable is selected to correspond to the lowest audible frequency mode of said at least one mode of low-frequency coloration (Claim 19).

28. Regarding Claim 25, Kashani discloses a system for actively damping the low-frequency coloration of sound comprising: a listening room including a sound source (Fig. 1), said listening room defining at least one mode of low-frequency coloration attributable to said sound source (Figs. 1 and 2); an acoustic wave sensor positioned within said listening room, wherein said acoustic wave sensor is operative to produce a first signal representative of said at least one mode of low-frequency coloration, and wherein said first signal represents pressure sensed by said acoustic wave sensor (Figs. 1 and 2); an acoustic wave actuator responsive to a second signal and positioned within said listening room, wherein said acoustic wave actuator is substantially collocated with said acoustic wave sensor, wherein said second signal represents a rate of change of volume velocity to be produced by said acoustic wave actuator, and wherein said acoustic wave actuator introduces acoustic dynamics into said system (Figs. 1 and 2); and an electronic feedback controller defining an input coupled to said first signal and an output, wherein said electronic feedback controller is operative to generate said second signal at said output by applying a feedback controller transfer

function to said first signal, invert the phase of said second signal, and to introduce inverted actuator acoustic dynamics into said second signal, said feedback controller transfer function comprises a second order differential equation including a first variable representing a predetermined damping ratio and a second variable representing a tuned natural frequency, said second variable representing said tuned natural frequency is selected to be tuned to said at least one mode of low-frequency coloration (Figs. 1 and 2; Claims 1 and 20), and wherein said feedback controller transfer function is **selected** from the group consisting of:

$$\frac{V(s)}{P(s)} = G \frac{s^2}{s^2 + 2\xi\omega_n s + \omega_n^2} \qquad (1)$$

$$\frac{V(s)}{P(s)} = G \frac{s}{s^2 + 2\xi\omega_n s + \omega_n^2} \qquad (2), \text{ and}$$

$$\frac{V(s)}{P(s)} = G \frac{s(s+2)}{s^2 + 2\xi\omega_n s + \omega_n^2} \qquad (3)$$

where the units of V(s) corresponds to said rate of change of volume velocity, P(s) corresponds to the pressure at the location of said acoustic wave actuator and said acoustic wave sensor, a represents a weighting factor, ξ is a damping ratio, ω_n is said tuned natural frequency, and G is a gain value, said feedback controller transfer function defines a frequency response having a characteristic maximum gain

substantially corresponding to the value of said at least one mode of low-frequency coloration, said feedback controller transfer function creates a 90 degree phase lead substantially at said at least one mode of low-frequency coloration, said feedback controller transfer function defines a frequency response having a gain that increases substantially uniformly from a minimum frequency value to an intermediate frequency value to define a characteristic maximum gain and decreases substantially uniformly from said intermediate frequency value to a maximum frequency value, and wherein said intermediate frequency value corresponds to said at least one mode of low-frequency coloration (i.e. Kashani disclose equation (1))(Claim 20).

Claim Rejections - 35 USC § 103

29. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

30. Claims 4-6, 21, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5974155 to Kashani.

31. Regarding Claim 4, Kashani discloses said first signal represents pressure sensed by said acoustic wave sensor, said second signal represents a rate of change of volume velocity to be produced by said acoustic wave actuator (Figs. 1 and 2), but does not expressly discloses wherein said feedback controller transfer function is as follows:

$$\underline{V(s)} = G \, \underline{\qquad s \qquad}$$

$$P(s) \qquad s^2 + 2\xi\omega_n s + \omega_n^2$$

where the units of V(s) corresponds to said rate of change of volume velocity, P(s) corresponds to the pressure at the location of said acoustic wave sensor and said acoustic wave actuator, s is the Laplace variable, ξ is a damping ratio, ω_n is said tuned natural frequency, and G is a negative gain value. However it would have been obvious to one have ordinary skill in the art to derive such a transfer function in order to set where the zero and poles are need to define a frequency response wherein the gain of the frequency response increases substantially uniformly from a minimum frequency value to an intermediate frequency value to define a characteristic maximum gain and decreases substantially uniformly from the intermediate frequency value to a maximum frequency value.

32. Regarding Claim 5, Kashani discloses said first signal represents pressure sensed by said acoustic wave sensor, said second signal represents a rate of change of volume velocity to be produced by said acoustic wave actuator (Figs. 1 and 2), but does not expressly discloses wherein said feedback controller transfer function is as follows:

$$\frac{V(s)}{P(s)} = G \frac{s(s+2)}{s^2 + 2\xi\omega_n s + \omega_n^2}$$

where the units of %s) corresponds to said rate of change of volume velocity, P(s) corresponds to the pressure at the location of said acoustic wave sensor and said acoustic wave actuator, s is the Laplace variable, a represents a weighting factor, ξ is a damping ratio, ω_n is said tuned natural frequency, and G is a gain value. However it would have been obvious to one have ordinary skill in the art to derive such a transfer

function in order to set where the zero and poles are need to define a frequency response wherein the gain of the frequency response increases substantially uniformly from a minimum frequency value to an intermediate frequency value to define a characteristic maximum gain and decreases substantially uniformly from the intermediate frequency value to a maximum frequency value

33. Regarding Claim 6, Kashani discloses said first signal represents pressure sensed by said acoustic wave sensor, said second signal represents a rate of change of volume velocity to be produced by said acoustic wave actuator, said feedback controller transfer function is augmented by the inverse of an acoustic wave actuator transfer function of said acoustic wave actuator to produce an augmented feedback controller transfer function (Figs. 1 and 2), but does not expressly disclose wherein said augmented feedback controller transfer function is as follows:

$$\frac{V(s)}{P(s)} = G\,\frac{s^2 + 2\xi_s\omega_s s + \omega_s^2}{s^2 + 2\xi\omega_n s + \omega_n^2}$$

where the units of V(s) corresponds to said rate of change of volume velocity, P(s) corresponds to the pressure at the location of said acoustic wave sensor and said acoustic wave actuator, s is the Laplace variable, ξ represents a damping ratio of an acoustic damping controller, ξ_s represents a damping ratio of said acoustic wave actuator, ω_n is said tuned natural frequency, ω_s is a natural frequency of said acoustic wave actuator, and G is a gain value. However it would have been obvious to one have ordinary skill in the art to derive such a transfer function in order to set where the zero and poles are need to define a frequency response wherein the gain of the frequency

response increases substantially uniformly from a minimum frequency value to an intermediate frequency value to define a characteristic maximum gain and decreases substantially uniformly from the intermediate frequency value to a maximum frequency value.

34. Regarding Claim 21, Kashani discloses an acoustic wave actuator, but does not expressly discloses said acoustic wave actuator is a subwoofer. However it been obvious to one having ordinary skill in the art to utilize any known acoustic wave actuator such as a subwoofer in order to provide frequency characteristics to effectively reduce an amplitude of low frequency noise within an enclosure.

35. Regarding Claim 26, Kashani discloses said feedback controller transfer function is augmented by the inverse of an acoustic wave actuator transfer function of said acoustic wave actuator to produce an augmented feedback controller transfer function (Figs. 1 and 2), but does not expressly discloses said augmented feedback controller transfer function is as follows:

$$\frac{V(s)}{P(s)} = G \frac{s^2 + 2\xi_s\omega_s s + \omega_s^2}{s^2 + 2\xi\omega_n s + \omega_n^2}$$

where the units of V (s) corresponds to said rate of change of volume velocity, P(s) corresponds to the pressure at the location of said acoustic wave sensor and said acoustic wave actuator, s is the Laplace variable, ξ represents a damping ratio of an acoustic damping controller, ξ_s represents a damping ratio of said acoustic wave actuator, ω_n is said tuned natural frequency, ω_s is a natural frequency of said acoustic wave actuator, and G is a gain value. However it would have been obvious to one have

ordinary skill in the art to derive such a transfer function in order to set where the zero and poles are need to define a frequency response wherein the gain of the frequency response increases substantially uniformly from a minimum frequency value to an intermediate frequency value to define a characteristic maximum gain and decreases substantially uniformly from the intermediate frequency value to a maximum frequency value.

36. Claims 27-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5974155 to Kashani in view of U.S. Patent No. 5343713 to Okabe et al. (hereafter as Okabe).

37. Regarding Claim 27, Kashani discloses a system and method for actively damping low frequency noise within an enclosure but only generally; no specific enclosure is taught. Therefore it would have been obvious to one having ordinary skill in the art to seek known enclosures that utilizing active noise cancellation. Okabe discloses an active noise control apparatus for a three-dimensional space such as a duct (Figs. 12 and 14). It would have been obvious to one having ordinary skill in the art to employ any known enclosures that utilize active noise cancellation, such as that of Okabe. Therefore it would have been obvious to one having ordinary skill in the art to modify Kashani with the teaching of Okabe to utilize the system and method for actively damping low frequency noise within an enclosure of Kashani in an enclosure such as a duct, which will provide a system and method that effectively reduces the amplitude of low frequency noise within an enclosure such as a duct. Therefore Kashani as modified

discloses a system for actively treating noise within a fluid-carrying duct comprising: a fluid-carrying duct (Okabe, Figs. 12-15); a source of acoustical disturbance within said fluid-carrying duct, wherein said acoustical disturbance defines at least one frequency of disturbance within said fluid- carrying duct (Kashani, column 1, lines 41-57; Okabe, Figs. 12-15); an acoustic wave sensor positioned to sense fluid pressure within said duct, wherein said acoustic wave sensor is operative to produce a first signal representative of said frequency of disturbance (Kashani, Figs. 1 and 2); an acoustic wave actuator positioned to manipulate fluid within the duct, wherein said acoustic wave actuator is substantially collocated with said acoustic wave sensor (Kashani, Figs. 1 and 2); and an electronic feedback controller defining an input coupled to said first signal and an output, wherein said electronic feedback controller is operative to generate said second signal at said output by applying a feedback controller transfer function to said first signal, said feedback controller transfer function comprises a second order differential equation including a first variable representing a predetermined damping/treating ratio and a second variable representing a tuned natural frequency, said second variable representing said tuned natural frequency is selected to be tuned to said frequency of disturbance, and said feedback controller transfer function defines a frequency response having a characteristic maximum gain substantially corresponding to the value of said frequency of disturbance (Kashani, Figs. 1 and 2; Claim 1).

38. Regarding Claim 28, Kashani as modified discloses the fluid-carrying duct is selected from the group consisting of liquid- carrying ducts, gas-carrying ducts, and combinations thereof (Okabe, Figs. 12-15).

39. Regarding Claim 29, Kashani as modified discloses said acoustic wave sensor is a microphone and said acoustic wave actuator (Kashani, Figs. 1 and 2), but does not expressly discloses acoustic wave actuator is a subwoofer. However it been obvious to one having ordinary skill in the art to utilize any known acoustic wave actuator such as a subwoofer in order to provide frequency characteristics to effectively reduce an amplitude of low frequency noise within an enclosure.

40. Regarding Claim 30, Kashani discloses said acoustic wave sensor is a pressure sensor and said acoustic wave actuator is a diaphragm modulated by an electrical or hydraulic drive (Kashani, Figs. 1 and 2; Claim 2).

41. Regarding Claim 31, Kashani as modified disclose said system is employed in air-conditioning ducts, industrial exhaust stacks and engine intake and exhaust apparatus, or pulsation abatement in liquid- carrying lines (Okabe, Figs. 12-15).

42. Regarding Claims 32 and 33, Kashani does not expressly discloses said feedback controller transfer function is arranged to simulate an active, low-pass acoustic filter and wherein said feedback controller transfer function is as follows: $LP = Cs^2$; C represents the compliance of the acoustic system, and s is the Laplace variable. However it would have been obvious to one having ordinary skill in the art to provide such said feedback controller transfer function is arranged to simulate an active, low-pass acoustic filter said feedback controller transfer function is as follows: $LP = Cs^2$; C

represents the compliance of the acoustic system, and s is the Laplace variable in order to provide desired frequency characteristics.

43. Regarding Claim 34 and 35, Kashani discloses said feedback controller transfer function is arranged to simulate an active, high-pass acoustic filter and wherein said feedback controller transfer function is as follows: HP=1/L where L represents the inertance of ports in the system. However it would have been obvious to one having ordinary skill in the art to provide such said feedback controller transfer function is arranged to simulate an active, high-pass acoustic filter and wherein said feedback controller transfer function is as follows: HP=1/L where L represents the inertance of ports in the system in order to provide desired frequency characteristics.

Double Patenting

44. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Omum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attomey or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

45. Claims 1-3, 7-19, and 22-24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2, and 4-19 of

U.S. Patent No. 5974155. An obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but an examined application claims not is patentably distinct from the reference claims(s) because the examined claim is either anticipated by, or would have been obvious over, the reference claims(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*,. 11 F.3d 1046,29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985). Although the conflicting claims are not identical, they are not patentably distinct from each other because instant Claims 1-3, 7-19, and 22-24 falls entirely within the scope of Claims 1-2, and 4-19 of U.S. Patent No. 5974155 or, in other words, instant Claims 1-3, 7-19, and 22-24 is obvious over Claims 1-2, and 4-19 of U.S. Patent No. 5974155. The Claims 1-2, and 4-19 of U.S. Patent No. 5974155 is a broader version of instant Claims 1-3, 7-19, and 22-24 and is therefore obvious of Claims 1-2, and 4-19 of U.S. Patent No. 5974155 (i.e. it is inherent the "noise" of U.S. Patent No 5974155 contains "low-frequency coloration of sound" of the instant application).

Conclusion

46. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey P. Chau whose telephone number is (571)272-7514. The examiner can normally be reached on Monday - Friday 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tran Sinh can be reached on (571)272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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June 13, 2005

XU MEI
PRIMARY EXAMINER